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A PROSPECTIVE OBSERVATIONAL STUDIES ON DRUG UTILIZATION EVALUATION AND RATIONAL USE OF CORTICOSTEROIDS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Corticosteroids are widely prescribed Drugs in Hospitals, forming a part of standard treatment of modern medicine for a wide range of diseases, associated with inflammation and immune activation. Apart from beneficial effects they also produce number of adverse effects. In the present study, Prospective Observational studies on DUE (Drug utilization evaluation) and rationality of Corticosteroids has been Performed. **Objectives:** To Investigate the Drug utilization evaluation, Prescription pattern and Rationality of corticosteroids in various department of tertiary care teaching hospital. **Methodology:** A prospective observational study was conducted on 235 patients receiving corticosteroids in the various departments of goverment Hospital, Erode. Patients prescribed corticosteroids therapy was included in the study. Exclusion of those patients with age less than 18, psychiatric disease, pregnant women and patients not willing to sign on consent form. **Result:** This study included 375 Patients out of which 68% were Male and 32% were female. In Age wise distribution, 15% Patients prescribed with corticosteroid in age group 18-28 years, 20% patients in 29- 38 years, 12 in 32-48 years, 16% in 49-58 years, 22% in 59-68 years, 11% in 69-78 years and 4% in above 80 years. This data showed that commonly male populations are more prone to diseases. As per the demographic data our finding shows that Budesonide was the most frequent prescribed corticosteroid (31.75%) followed by Hydrocortisone (26.19%), Dexamethasone (15.08%), Prednisolone 13.49%, Betamethasone (7.94%), Methyl prednisolone (5.56%). Out of 100

prescriptions total 10 ADRs and 25 Drug interactions were detected in this study. The majority of drug interactions were minor 24 followed by major 1. **Conclusion:** The Prescription pattern of corticosteroids was found to be rational as there is no Major drug interaction. Commonly geriatric population was more prone to diseases, for which steroids were used. Hence close observation is required to ensure safety, effectiveness and well-balanced therapeutic management with corticosteroids, both patients and prescribers should be more aware of the appropriate dose, dosage regimen, Drug - Drug interactions, ADRs and overall guidelines for corticosteroids prescribing.

KEYWORDS: Corticosteroids, Drug utilization evaluation, Prescription pattern.

1. INTRODUCTION

Corticosteroids

Corticosteroids are a class of drugs that can reduce inflammation. However, they also cause a range of side effects that limit their use. Types of corticosteroid include prednisone and cortisone.

USE

Corticosteroids have several different effects on the body, which means that they can treat a range of medical conditions. They can reduce inflammation, suppress overactive immune system responses, and help with hormonal imbalances.

Corticosteroids are fast-acting in the body, which makes them useful for treating sudden, severe symptoms. For example, they can effectively manage allergic responses.

These drugs can also suppress the immune system, which makes them helpful for treating autoimmune diseases.

Some conditions that corticosteroids can help treat include

- Asthma
- Allergies
- Eczema
- Hives
- Psoriasis
- Chronic obstructive pulmonary disease (copd)

- Inflammatory bowel disease, which includes crohn'sdisease and ulcerative colitis
- Multiple sclerosis (ms)
- Lupus
- Addison's disease
- Rheumatoid arthritis

Doctors may also use them to treat people who are recovering from an organ transplant.

Types and drug list

Corticosteroids have a long history of use in the United States. Most are now available in generic forms, including

- Cortisone
- Prednisone
- Prednisolone
- Methylprednisolone
- Dexamethasone
- Betamethasone
- Hydrocortisone

Corticosteroids can come in the form of

- Tablets
- Capsules
- Eye drops
- Lotions, creams, ointments, or gels
- Nasal or mouth sprays
- Injections

A doctor will prescribe different forms of corticosteroids, depending on the problem. For example, they may prescribe a cream, lotion, ointment, or gel to treat skin conditions.

Side effects

Long-term use of corticosteroids can have side effects that include

- Acne
- Weight gain

- Bruising
- Mood disorders, including depression
- High blood pressures
- Diabetes
- Osteoporosis
- Cataracts
- Glaucoma
- Liver damage

Long-term corticosteroid use can cause the adrenal glands to stop producing the hormone cortisol. After stopping corticosteroid use, it may take some time for the body to start making cortisol at a normal rate.

Short-term use of corticosteroids is safer, but there are still risks. For example, these drugs can cause changes in sleep, mood, and appetite.

There are also signs that short-term use can have more serious side effects. A 2017 study trusted source involving 327, 452 adults who received a prescription for corticosteroids found that within 30 days of using them, there was an increase in the risk of sepsis, blood clots, and bone fractures.

How corticosteroids work

Corticosteroids mimic the effects of hormones, such as cortisol. A doctor will prescribe corticosteroids to either increase the action of these hormones above a normal level or return it to a normal level.

A person with Addison's disease, for example, can benefit from this treatment as their body will not produce enough cortisol.

The increase in hormonal activity suppresses the immune system, which is responsible for activating inflammation in the body. By suppressing immune system activity, corticosteroids can reduce inflammation.

RISKS

Corticosteroids can have substantial effects on the body by suppressing the immune system. Doctors typically use corticosteroids if other treatments are not working, or they require a

rapid response.

Taking corticosteroids can cause spikes in blood sugar levels, which can be dangerous for people with diabetes.

Corticosteroids could be harmful in people with

- Diabetes
- Depression
- Obesity
- Substance use disorder
- Glaucoma or cataracts
- Ulcers
- A recent heart attack or heart failure
- High blood pressure
- Liver problems
- Epilepsy
- Ongoing infections
- Large wounds

It is possible to use corticosteroid medications during pregnancy, but there are always risks with corticosteroid use. Therefore, doctors may avoid prescribing them to women who are pregnant when possible.

Corticosteroids can reduce the effectiveness of some medications and make others more potent. Before using corticosteroids, people should tell a doctor if they are taking any medications to treat the following:

- Excessive blood clotting
- Seizures
- Diabetes
- HIV

Certain vaccines, such as those for measles, mumps, and tuberculosis, can have dangerous interactions with corticosteroids. Other vaccines, such as those for flu or pneumonia, may not work as well if a person is also taking a high dosage of a corticosteroid.

It can also be harmful to use corticosteroids alongside nonsteroidal anti- inflammatory drugs (NSAIDs), such as ibuprofen (Advil).

The side effects may differ depending on the specific form of corticosteroid. For example, a corticosteroid cream that a person applies to the face might have different side effects than a corticosteroid tablet or injection.

METHYLPREDNISOLONE VS PREDNISOLONE

Methyl Prednisolone and prednisone are both corticosteroids and have similar actions. However, methylprednisolone and prednisone differ in their available forms and side effects.

Both medications reduce inflammation, and people use them to relieve the symptoms of many health conditions, such as rheumatoid arthritis (RA), lupus, and eczema. we look at the differences between methylprednisolone and prednisone.

Corticosteroids reduce inflammation by suppressing the immune system. They are a standard treatment for autoimmune conditions, which often cause inflammation in the body.

Doctors may prescribe methylprednisolone and prednisone to treat the following conditions:

- Endocrine or thyroid conditions
- RA
- Some types of osteoarthritis
- Eczema or atopic dermatitis
- Severe psoriasis
- Allergic reactions, including asthma
- Multiple sclerosis (ms)
- Colitis

Methylprednisolone and prednisone are both common medications that are similar in price. They can come in branded or generic forms. As with most drugs, the generic versions cost less but still comprise the same substances.

Methylprednisolone is stronger than prednisone

- prednisone is four times as potent as cortisol, a steroid hormone that is present in the body
- methylprednisolone is five times as potent as cortisol

Side effects

As methylprednisolone and prednisone are both very potent, they can cause a range of side effects, including.

- Headaches
- Dizziness
- Nausea
- Vomiting
- Thin, fragile skin
- Acne
- Slow wound healing
- Irregular menstruation
- Insomnia
- Mood swings
- Depression
- Vision problems
- Seizures
- Menstrual difficulties
- Muscle and joint pain
- Eye irritation
- Heartburn
- Changes in personality
- Appetite changes
- Twitching or tightening muscles
- Shaky hands
- Irregular heartbeat
- Stomach pain

The side effects of prednisone can also include losing touch with reality. For this reason, doctors may prescribe methylprednisolone to someone with a risk of mental health conditions instead of prednisone to reduce the risk of psychosis.

Due to these side effects, doctors may avoid prescribing these corticosteroids. They may only recommend them if nonsteroidal anti-inflammatory drugs (NSAIDs) are not effective or if a

person has severe inflammation.

Drug interactions

Corticosteroids can interact with many other medications, including some nutritional supplements and alternative medicines, such as herbal remedies.

Corticosteroids may interact with

- Warfarin, a blood thinner
- Nonsteroidal anti-inflammatory drugs (nsaids), such as aspirin and naproxen
- Antivirals, such as ritonavir and atazanavir

Before using corticosteroids, a person should tell their doctor about any other medications they are taking.

Betamethasone is a corticosteroid that doctors use to treat skin conditions that cause inflammation and itchiness. People can use injectable or topical betamethasone. However, betamethasone may cause side effects.

Betamethasone is available in different formulations, which range in potency from medium to super potent. Doctors will choose the most suitable betamethasone product for a person depending on their skin condition and the area of the body that it is affecting.

How does betamethasone work?

Betamethasone works in a variety of ways following its injection or application to the skin. It has anti-inflammatory activity and can suppress the immune system. Corticosteroids can also stop skin cells from growing and multiplying.

How to use and dosage

People use betamethasone in different ways depending on the type. A person should ask their doctor or pharmacist for specific instructions.

Injection

Doctors will determine the correct dosage of injectable betamethasone depending on the condition that they are treating.

Creams and lotions

People can apply a few drops of betamethasone dipropionate or betamethasone valerate lotion to the affected area once or twice a day. Usually, doctors prescribe this product for use on

hairy areas of the body.

People should apply just a thin layer of betamethasone creams and ointments.

Doctors recommend using betamethasone dipropionate only once or twice daily, but people can use betamethasone valerate up to three times daily.

Spray

Doctors can prescribe Sernivo spray for up to 4 weeks. According to the directions, people should apply the spray to the affected area twice daily and rub it in gently.

Foam

People use Luxiq on their scalps twice a day. The foam will melt once it comes into contact with a warm surface, so people cannot apply this product directly onto their hands.

Instead, doctors instruct people to apply a small amount of Luxiq to a cold surface. From there, they can pick up a small amount with their fingers and gently massage it into the affected area of skin.

Side effects

Betamethasone may cause itching or redness of the skin.

When doctors administer betamethasone injections, people may report a range of side effects that affect different parts of the body, including the:

- Immune system
- Cardiovascular system
- Skin
- Endocrine system
- Abdominal tract
- Muscles and bones
- Central and peripheral nervous system
- Eyes

People may also report side effects when using betamethasone lotion or ointment on their skin. The most common side effects that people report include.

- redness of the skin

- inflammation of the hair follicles
- itchiness
- blistering of the skin

Betamethasone dipropionate cream is a weaker corticosteroid than the ointment, and people report fewer side effects. In a studyof 142 adults using betamethasone dipropionate cream, only one person experienced an adverse effect, which was a stinging sensation.

Burning and stinging of the skin can also occur when people use betamethasone valerate aerosol foam.

When people use betamethasone dipropionate spray, the most common side effects are:

- Itchiness
- Burning or stinging
- Pain
- Thinning of the skin

Rarely, people who use betamethasone valerate products may experience localized side effects on the area where they applied the product. These may include:

- Burning
- Itchiness
- Irritation
- Dryness
- Inflammation of the hair follicles

Side effects

Long-term use of corticosteroids can have side effects that include:

- Acne
- Weight gain
- Bruising
- Mood disorders, including depression
- High blood pressure
- Diabetes
- Osteoporosis

- Cataracts
- Glaucoma
- Liver damage

Long-term corticosteroid use can cause the adrenal glands to stop producing the hormone cortisol. After stopping corticosteroid use, it may take some time for the body to start making cortisol at a normal rate.

Short-term use of corticosteroids is safer, but there are still risks. For example, these drugs can cause changes in sleep, mood, and appetite.

There are also signs that short-term use can have more serious side effects. A study trusted source involving 327,452 adults who received a prescription for corticosteroids found that within 30 days of using them, there was an increase in the risk of sepsis, blood clots, and bone fractures.

How corticosteroids work

Corticosteroids mimic the effects of hormones, such as cortisol. A doctor will prescribe corticosteroids to either increase the action of these hormones above a normal level or return it to a normal level.

A person with Addison's disease, for example, can benefit from this treatment as their body will not produce enough cortisol.

The increase in hormonal activity suppresses the immune system, which is responsible for activating inflammation in the body. By suppressing immune system activity, corticosteroids can reduce inflammation.

Risks

Corticosteroids can have substantial effects on the body by suppressing the immune system. Doctors typically use corticosteroids if other treatments are not working, or they require a rapid response.

Taking corticosteroids can cause spikes in blood sugar levels, which can be dangerous for people with diabetes.

Corticosteroids could be harmful in people with

- Diabetes
- Depression
- Obesity
- Substance use disorder
- Glaucoma or cataracts
- Ulcers
- A recent heart attack or heart failure
- High blood pressure
- Liver problems
- Epilepsy
- Ongoing infections
- Large wounds

It is possible to use corticosteroid medications during pregnancy, but there are always risks with corticosteroid use. Therefore, doctors may avoid prescribing them to women who are pregnant when possible.

Corticosteroids can reduce the effectiveness of some medications and make others more potent. Before using corticosteroids, people should tell a doctor if they are taking any medications to treat the following.

- Excessive blood clotting
- Seizures
- Diabetes
- HIV

Certain vaccines, such as those for measles, mumps, and tuberculosis, can have dangerous interactions with corticosteroids. Other vaccines, such as those for flu or pneumonia, may not work as well if a person is also taking a high dosage of a corticosteroid.

It can also be harmful to use corticosteroids alongside nonsteroidal anti- inflammatory drugs (NSAIDs), such as ibuprofen (Advil).

The side effects may differ depending on the specific form of corticosteroid. For example, a corticosteroid cream that a person applies to the face might have different side effects than a

corticosteroid tablet or injection.

Coping with side effects

Taking lower dosages over shorter periods will reduce the risk of side effects from corticosteroids. Doctors will always try to prescribe the lowest dosage that will still provide effective treatment.

Some tips to reduce the risk of problems when taking corticosteroids include

- Avoiding interactions by making sure that the doctor is aware of all other medications and supplements
- Being careful to prevent infections where possible, such as by getting a flu vaccine and keeping open wounds clean and protected
- Keeping the bones healthy through proper exercise, a healthful diet, and, for older adults, calcium and vitamin d supplements
- Taking precautions to avoid becoming pregnant, if possible
- Having regular eye exams
- Watching out for signs of water retention, such as swollen ankles
- Taking doses according to the doctor's prescription
- Applying a retinoid cream at the same time as corticosteroid creams, gels, or lotions to reduce the risk of thin skin
- Avoiding sudden changes in dosage to reduce the risk of complications, such as withdrawal symptom.

Drug interactions

Corticosteroids can interact with many other medications, including some nutritional supplements and alternative medicines, such as herbal remedies.

Corticosteroids may trust sources interact with

- warfarin, a blood thinner
- nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin and naproxen
- antivirals, such as ritonavir and atazanavir

Before using corticosteroids, a person should tell their doctor about any other medications they are taking.

2. REVIEW OF LITERATURE

Madhuriladhathadanki *et.al.*, (2023) conducted study Steroids are widely prescribed and used by practitioners due to powerful anti-inflammatory and immunosuppressive actions. So, care should be exercised in the rational selection of steroids. The main aim of our study is to assess prescribing patterns, demographic and clinical variables such as drug interactions associated with corticosteroid administration and steroidal use in a tertiary care teaching hospital. Methods: This is a prospective observational study conducted for 6 months in all departments of a tertiary care hospital of various age groups in all the departments were included. The study was carried out by taking 310 participants into consideration, and their prescribing patterns were observed and analyzed. Statistical procedure of One way ANOVA was done in SPSS version 16 software. Two way ANOVA was done which showed that variability is observed in the gender groups with treatment about steroids treatment. Results: Steroids were prescribed for various age groups of patients; 84 patients are above 60 years of age. Among 310, 183 patients were male and 127 patients were female. The social history of each patient was collected and analyzed 116 patients are Smokers and 194 patients are non-smokers and 118 patients are Alcoholics and 192 patients are nonalcoholics. Budesonide was most widely used for about 39%. Systemic route (42.9%) is the most commonly used route of administration for the steroids. We found 13.5% Major interactions, 91.6% Moderate interactions, 20.3% Minor interactions. Conclusion: Our study reveals that there was a significant difference between the steroid treatments.

Syedamesarrathunissa *et.al.*, (2023) A prospective observational study was conducted on 100 patients receiving corticosteroids in the various departments of osmania general Hospital, Hyderabad. Patients prescribed corticosteroids therapy was included in the study. Exclusion of those patients with age less than 18, psychiatric disease, pregnant women and patients not willing to sign on consent form. This study included 100 Patients out of which 68 were Male and 32 were female. In Age wise distribution, 15 Patients prescribed with corticosteroid in age group 18-28 years, 20 patients in 29- 38 years, 12 in 32-48 years, 16 in 49-58 years, 22 in 59-68 years, 11 in 69-78 years and 4 in above 80 years. This data showed that commonly male populations are more prone to diseases. As per the demographic data our finding shows that Budesonide was the most frequent prescribed corticosteroid (31.75%) followed by Hydrocortisone (26.19%), Dexamethasone (15.08%), Prednisolone 13.49%, Betamethasone (7.94%), Methyl prednisolone (5.56%). Out of 100 prescriptions total 10 ADRs and 25 Drug interactions were detected in this study. The majority of drug interactions

were minor 24 followed by major 1.

Mani pandey *et.al.*,(2022) This study is performed to determine statistically data percentage of the issues addressed by Drug Utilization Review (DUR) for Corticosteroids use and to show the need of monitoring, to control drug interactions. Observational case series is performed and data is collected according to inclusion and exclusion criteria. Drugs prescribed are rigorously analyzed for drug interactions and for other parameters by using drug interaction checker available from Medscape and Drugs. com. In total 1928 drugs from 199 cases are analyzed for drug-drug interactions and it was found that, incidence percentage of severe are 6 (0.97%), Significant are 371 (60.12%) and Minor are 240 (38.90%) from total drug-drug interactions ie TDDI= 617. Age group distribution analysis showed that age group of 60-70 Years (34.52%) got more number of drug-drug interactions, probably due to co-morbidities and more use of corticosteroids. Other parameters studied under DUR, showed incidence of Clinical abuse or misuse 66 (33.16%) and drug disease interaction 63 (31.65%) with high incidence rate from the total number of 199 cases under study. The most common mechanism responsible for drug-drug interaction was found, which affects enzyme CYP3A4 386 (62.56%), then mechanism which Antagonize effect or decrease effect 51 (8.26%) and least involved mechanism being P-glycoprotein 15 (2.43%). The results shows intense need of clinical pharmacologist/pharmacist services, who will do the need full for monitoring of any kind of clinical errors and ADRs related to medicines. It also signifies the need of computerized prescription monitoring to provide quality healthcare.

Arulbalasubramanian *et.al.*, (2022)The purpose of this study was to obtain information about Corticosteroids prescribing and utilization pattern, to understand the prescribing behaviour of physicians and to identify drug interactions. A retrospective observational study was conducted in the department of dermatology and general medicine in a tertiary care hospital for 6 months. All the patients receiving any category of steroid therapy were included, and the prescribing and tapering pattern of steroids were reviewed. Drug utilization pattern (DUR) was observed and analysed among 150 patients during the study period. The results revealed that steroids were prescribed for various respiratory illnesses (66%) and skin-related conditions (34%). The steroid utilization was found to be more in elderly patients, particularly in males. Intravenous administration was common in 33% of cases. Budesonide was the most commonly prescribed steroid (36%), followed by Hydrocortisone (24%) and Dexamethasone (14%). The most frequent drug-drug interaction was between Hydrocortisone

and Theophylline as well as Hydrocortisone and Hypoglycaemic agents. Most drugs were prescribed rationally, although some factors like prescribing drugs in the brand name, without mentioning route of administration, frequency and dose were deviating away from rationality. Not much variation was found in the pattern of prescription amongst healthcare professionals. Although most of the drugs were prescribed rationally, the involvement of a clinical pharmacist in patient care can help in more rational prescribing along with prevention and early detection of ADRs which can directly promote drug safety and better patient outcomes.

Haiyaj.sheth *et.al.*, (2021)This prospective, observational study was carried out in department of dermatology for 1 year after ethical approval. Data was analysed for parameters related to corticosteroids, their potency, WHO drug prescribing indicators, effectiveness as well as effects of corticosteroids on quality of life of patients. Statistical analysis was done using Microsoft Excel Office 365. In the 223 patients, 44.84% patients belonged to 21-40 years age group. Mostcommon indication was eczema in 29.15% cases. Topical betamethasone (25.11%) and oral prednisolone (20.17%) were most frequently prescribed. 95/140 topical steroids prescribed were super highly potent. Among concomitant drugs, a majority of 38% were antihistaminics. Degree of polypharmacy showed 04 drugs in a majority (43.15%) of prescriptions. Only 6.27% drugs were prescribed by generic name.

Imam s *et.al.*, (2021) We conducted a prospective observational study on 120 patients receiving corticosteroids in the department of General medicine, Respiratory and Orthopedic in a tertiary care teaching hospital for the period of 6 months. Inpatients between 18-60 years receiving corticosteroid therapy were included in the study, exclusion of those patients who were under critical condition, lactating and nursing mothers and those not willing to sign on inform consent form.

Deepalakshmi m *et.al.*, (2021) This Study was carried out with the objectives of assessing the rationale of prescribing corticosteroids, the most common type of corticosteroids prescribed, and common adverse reactions of corticosteroids and to perform drug utilization evaluation for corticosteroids. Materials and Methods: This prospective observational study was carried out for a period of 6 months by including every case prescribed with corticosteroid in the general medicine wards. The data was captured in a structured form and analysed using SPSS.

zhong wong *et.al.*, (2021) At the individual patient level, during the period of our study

(January 2015 to November 2020), the average cost of an Advair Diskus® inhaler was $334, while the generic Wixela™ Inhub™ was $115. This amounts to a significant cost-savings for each unit purchased. The wholesale price comparison portends increased affordability, even though our study did not capture the actual cost for patients at the pharmacy counter, such as savings based on health insurance or coupons. For patients with medication coverage via health insurance, generic availability on the market still leads to cost-savings at the pharmacy since the co-pay for generics tends to be lower than that for the branded and some authorized generic medications

ArnaudBourdin *et.al.*, (2021) Options to achieve oral corticosteroid (OCS)- sparing have been triggering increasing interest since the 1970s because of the side- effects of OCSs, and this has now become achievable with biologics. The Societe de Pneumologie de Langue Française workshop on OCSs aimed to conduct a comprehensive review of the basics for OCS use in asthma and issue key research questions. Pharmacology and definition of regular use were reviewed by the first working group (WG1). WG2 examined whether regular OCS use is associated with T2 endotype. WG3 reported on the specificities of the paediatric area. Key ―research statement proposals‖ were suggested by WG4. It was found that the benefits of regular OCS use in asthma outside episodes of exacerbations are poorly supported by the existing evidence.

Gareth Whelan *et.al.*, *(2020)* We searched the Allied and Complementary Medicine (AMED), Embase, EmCare, MEDLINE, CINAHL, and Web of Science from inception to January 22, 2021. We retrieved 4303 unique records, of which 17 were eventually included. Study appraisal was via the Downs and Black tool, with an average quality rating of fair. A Grading of Recommendations, Assessment, Development, and Evaluations assessment was conducted with the overall certainty of evidence being low to moderate. Reflecting heterogeneity in the study estimates, a pooled random-effects estimate of cortisol levels 7 days after corticosteroid injection was calculated. Fifteen studies or subgroups (254 participants) provided appropriate estimates for statistical pooling. A total of 106 participants received a spine injection, and 148 participants received an appendicular skeleton injection, including the glenohumeral joint, subacromial bursa, trochanteric bursa, and knee.

Alessandro Rossi *et.al.*, (2020) Opposite cortisol levels were found in GSDIa (increased) and GSDIb (decreased) patients. The findings of the current study suggest that imbalanced cortisol concentrations might be due to local deregulation rather than HPA axis activation in

GSDI. 11βHSD1 activity modulation by G6P availability could explain the opposite cortisol profile in GSDIa and GSDIb patients. We speculate that glucocorticoid deregulation might play a role in the development of the emerging complications in GSDIa (namely IR and MS) and GSDIb (delayed inflammation, autoimmune disorders) patients. The results of the current study suggest that adrenal evaluation should be considered to define the pathophysiology of complications in GSDI and possibly provide additional disease biomarker. It is noteworthy that the dysregulation of cortisol secretion is opposite in GSDIa and GSDIb. Future studies dissecting the connection between G6Pase system and 11βHSD1 are warranted in order to identify new potential therapeutic targets in GSDI patients

Mirko Griesel *et.al.*,(2022*)*Inhaled corticosteroids are well established for the long-term treatment of inflammatory respiratory diseases such as asthma or chronic obstructive pulmonary disease. They have been investigated for the treatment of coronavirus disease 2019 (COVID-19). The anti-inflammatory action of inhaled corticosteroids might have the potential to reduce the risk of severe illness resulting from hyperinflammation in COVID-19.To assess whether inhaled corticosteroids are effective and safe in the treatment of COVID-19; and to maintain the currency of the evidence, using a living systematic review approach.We searched the Cochrane COVID-19 Study Register (which includes CENTRAL, PubMed, Embase, ClinicalTrials.gov, WHO ICTRP, and medRxiv), Web of Science (Science Citation Index, Emerging Citation Index), and the WHO COVID-19 Global literature on coronavirus disease to identify completed and ongoing studies to 7 October 2021.We included randomised controlled trials (RCTs) evaluating inhaled corticosteroids for COVID-19, irrespective of disease severity, age, sex, or ethnicity.We included the following interventions: any type or dose of inhaled corticosteroids. We included the following comparison: inhaled corticosteroids plus standard care versus standard care (with or without placebo).

Manuel Spagl *et.al., (2019)* Systemic corticosteroids are used to treat people with COVID-19 because they counter hyper-inflammation. Existing evidence syntheses suggest a slight benefit on mortality. Nonetheless, size of effect, optimal therapy regimen, and selection of patients who are likely to benefit most are factors that remain to be evaluated To assess whether and at which doses systemic corticosteroids are effective and safe in the treatment of people with COVID-19, to explore equity-related aspects in subgroup analyses, and to keep up to date with the evolving evidence base using a living systematic review approach. We

searched the Cochrane COVID-19 Study Register (which includes PubMed, Embase, CENTRAL, ClinicalTrials.gov, WHO ICTRP, and medRxiv), Web of Science (Science Citation Index, Emerging Citation Index), and the WHO COVID-19 Global literature on coronavirus disease to identify completed and ongoing studies to 6 January 2022.

HengSong *et.al., (2021)* Fifty RCTs that included 12,304 patients with sepsis were identified. Corticosteroids were not associated with the mortality in 28-day (RR, 0.94; 95% CI, 0.87–1.02; evidence rank, moderate) and long-term mortality (>60 days) (RR, 0.96; 95% CI, 0.88–1.05) in patients with sepsis (evidence rank, low). However, corticosteroids may exert a significant effect on the mortality in the intensive care unit (ICU) (RR, 0.9; 95% CI, 0.83–0.97), in-hospital (RR, 0.9; 95% CI, 0.82–0.99; evidence rank, moderate) in patients with sepsis or septic shock (evidence rank, low). Furthermore, corticosteroids probably achieved a tiny reduction in the length of hospital stay and ICU. Corticosteroids were associated with a higher risk of hypernatremia and hyperglycemia; furthermore, they appear to have no significant effect on superinfection and gastroduodenal bleeding. Corticosteroids had no significant effect on the 28-day and long-term mortality; however, they decreased the ICU and hospital mortality. The findings suggest that the clinical corticosteroids may be an effective therapy for patients with sepsis during the short time.

Gianni D Angelini *et.al.*, (2021) There was a low or unclear risk of bias across the domains. There was moderate certainty of evidence that corticosteroids do not change the risk of in-hospital mortality (five RCTs; 313 participants; risk ratio (RR) 0.83, 95% confidence interval (CI) 0.33 to 2.07) for children undergoing cardiac surgery with CPB. There was high certainty of evidence that corticosteroids reduce the duration of mechanical ventilation (six RCTs; 421 participants; mean difference (MD) 11.37 hours lower, 95% CI -20.29 to -2.45) after the surgery. There was high-certainty evidence that the intervention probably made little to no difference to the length of postoperative intensive care unit (ICU) stay (six RCTs; 421 participants; MD 0.28 days lower, 95% CI -0.79 to 0.24) and moderate-certainty evidence that the intervention probably made little to no difference to the length of the postoperative hospital stay (one RCT; 176 participants; mean length of stay 22 days; MD -0.70 days, 95% CI -2.62 to 1.22). There was moderate certainty of evidence for no effect of the intervention on all-cause mortality at the longest follow-up (five RCTs; 313 participants; RR 0.83, 95% CI 0.33 to 2.07) or cardiovascular mortality at the longest follow-up (three RCTs; 109 participants; RR 0.40, 95% CI 0.07 to 2.46). There was low certainty of evidence

that corticosteroids probably make little to no difference to children separating from CPB (one RCT; 40 participants; RR 0.20, 95% CI 0.01 to 3.92). We were unable to report information regarding adverse events of the intervention due to the heterogeneity of reporting of outcomes. We downgraded the certainty of evidence for several reasons, including imprecision due to small sample sizes, a single study providing data for an individual outcome, the inclusion of both appreciable benefit and harm in the confidence interval, and publication bias.

Crystian B Oliveira *et.al.*, (2020) We included 25 clinical trials (from 29 publications) investigating the effects of epidural corticosteroid injections compared to placebo in patients with lumbosacral radicular pain. The included studies provided data for a total of 2470 participants with a mean age ranging from 37.3 to 52.8 years. Seventeen studies included participants with lumbosacral radicular pain with a diagnosis based on clinical assessment and 15 studies included participants with mixed duration of symptoms. The included studies were conducted mainly in North America and Europe. Fifteen studies did not report funding sources, five studies reported not receiving funding, and five reported receiving funding from a non-profit or government source. Eight trials reported data on pain intensity, 12 reported data on disability, and eight studies reported data on adverse events. The duration of the follow-up assessments ranged from 12 hours to 1 year. We considered eight trials to be of high quality because we judged them as having low risk of bias in four out of the five bias domains. We identified one ongoing trial in a trial registry.

Berenice Conversy *et.al.*, (2023) In this retrospective, descriptive study, all cases were recruited from 2006 to 2019, Inclusion criteria for the study were adult- sized cats (> 10 mo of age) that received at least 1 abdominal ultrasonographic examination. Exclusion criteria were cats with an endocrinopathy, as this can affect adrenal gland size(10-12), those with an adrenal nodule or mass, those receiving topical corticosteroids alone, those with an incomplete medical record, or those without adrenal ultrasonographic images. Case inclusion was decided by consensus among a veterinary diagnostic imaging intern (CG), an American College of Veterinary Radiology (ACVR) diplomate (CF), and an American and European College of Veterinary Internal Medicine (ACVIM — ECVIM) diplomate (BC). Signalment; adrenal size (maximal height and length of left and right adrenal glands) on sagittal plane on ultrasound images; corticotherapy type, dose and duration; and definitive or presumptive final diagnoses were retrospectively collected by a veterinary diagnostic imaging intern (CG). A

diagnosis was considered presumptive when the affection positively responded to the medical treatment implemented. It was considered definitive whenever a specific diagnosis was confirmed by paraclinical tests (*e.g*., cytology, histopathology, culture, or echocardiography). Images were acquired with 1 of 2 ultrasound machines: from 2006 to 2013, a Philips ATL HDI 5000 (Advanced Technology Laboratories, Bothell, Washington, USA); and from 2013 to 2019, a Toshiba Aplio 400 (Canon Medical System, Markham, Ontario); and were captured with either a linear transducer (5 to 12 and 13 to 18 MHz, respectively) or a convex transducer (5 to 8 and 8 to 11 MHz, respectively). Ultrasonographic examinations were completed by ACVR diplomates or ACVR residents supervised by ACVR diplomates. Patients were imaged in dorsal recumbency.

Sugee K. Liyanage *et.al.*, (2022)A total of 30 studies met the inclusion criteria, and involved more than 1.25 million children who were at least 1 year of age when the outcomes were assessed. Exposure to a single course of antenatal corticosteroids for children with extremely preterm birth was associated with a significant reduction in risk of neurodevelopmental impairment (adjusted odds ratio, 0.69 [95% CI, 0.57-0.84]; I^2 = 0%; low certainty). For children with late-preterm birth, exposure to antenatal corticosteroids was associated with a higher risk of investigation for neurocognitive disorders (n = 25 668 children; adjusted hazard ratio [aHR], 1.12 [95% CI, 1.05-1.20]; low certainty). For children with full-term birth, exposure to antenatal corticosteroids was associated with a higher risk of mental or behavioral disorders (n = 641 487 children; aHR, 1.47 [95% CI, 1.36-1.60]; low certainty) as well as proven or suspected neurocognitive disorders (n = 529 205 children; aHR, 1.16 [95% CI, 1.10-1.21]; low certainty)Results of this study showed that exposure to a single course of antenatal corticosteroids was associated with a significantly lower risk of neuro developmental impairment in children with extremely preterm birth but a significantly higher risk of adverse neuro cognitive and/or psychological outcomes in children with late-preterm and full-term birth, who made up approximately half of those with exposure to antenatal corticosteroids. The findings suggest a need for caution in administering antenatal corticosteroids.

YongfangZhao *et.al.,l* (2016) The adrenal gland produces steroid hormones to play essential roles in regulating various physiological processes. Our previous studies showed that knockout of hepatic Surf4 ($Surf4^{LKO}$) markedly reduced fasting plasma total cholesterol levels in adult mice, including low-density lipoprotein and high-density lipoprotein

cholesterol. Here, we found that plasma cholesterol levels were also dramatically reduced in 4-week-old young mice and non-fasted adult mice. Circulating lipoprotein cholesterol is an important source of the substrate for the production of adrenal steroid hormones. Therefore, we investigated whether adrenal steroid hormone production was affected in Surf4^{LKO} mice. We observed that lacking hepatic Surf4 essentially eliminated lipid droplets and significantly reduced cholesterol levels in the adrenal gland; however, plasma levels of aldosterone and corticosterone were comparable in Surf4^{LKO} and the control mice under basal and stress conditions. Further analysis revealed that mRNA levels of genes encoding enzymes important for hormone synthesis were not altered, whereas the expression of scavenger receptor class B type I (SR-BI), low-density lipoprotein receptor (LDLR) and 3-hydroxy-3-methyl-glutaryl-CoA reductase was significantly increased in the adrenal gland of Surf4^{LKO} mice, indicating increased *de novo* cholesterol biosynthesis and enhanced LDLR and SR-BI-mediated lipoprotein cholesterol uptake. We also observed that the nuclear form of SREBP2 was increased in the adrenal gland of *Surf4*^{LKO} mice. Taken together, these findings indicate that the very low levels of circulating lipoprotein cholesterol in Surf4^{LKO} mice cause a significant reduction in adrenal cholesterol levels but do not significantly affect adrenal steroid hormone production. Reduced adrenal cholesterol levels activate SREBP2and thus increase the expression of genes involved in cholesterol biosynthesis, which increases *de novo* cholesterol synthesis to compensate for the loss of circulating lipoprotein- derived cholesterol in the adrenal gland of Surf4^{LKO} mice.

Kiran Ninan *et.al.*, (2016) ,14 799 records, the reviewers screened 8815 non- duplicate titles and abstracts and assessed 713 full text articles. Seven randomised controlled trials and 10 population based cohort studies (1.6 million infants total) were included. In randomised controlled trials and population based data, ~40% of infants with early exposure to antenatal corticosteroids were born at term (low or very low certainty). Among children born at term, early exposure to antenatal corticosteroids versus no exposure was associated with increased risks of admission to neonatal intensive care (adjusted odds ratio 1.49, 95% confidence interval 1.19 to 1.86, one study, 5330 infants, very low certainty; unadjusted relative risk 1.69, 95% confidence interval 1.51 to 1.89, three studies, 1 176 022 infants, I^2=58%, τ^2=0.01, low certainty), intubation (unadjusted relative risk 2.59, 1.39 to 4.81, absolute effect 7 more per 1000, 95% confidence interval from 2 more to 16 more, one study, 8076 infants, very low certainty.

3. AIM AND OBJECTIVES

AIM

The aim of the study was to assess the utilization and evaluation of corticosteroids in tertiary care hospital.

OBJECTIVE

- To assess the knowledge about corticosteroids
- To assess the prevalence of risk of corticosteroids
- To provide awareness about use of corticosteroids

4. PLAN OF WORK

- The entire study was planned for a period of 9 months.
- This study was designed in four different phases as given below.

PHASE 1

- Literature survey
- Initial study to identify the scope of work
- Checking feasibility
- Preparation of study protocol
- Data collection form.

PHASE 2

- Selecting appropriate area to conduct the study
- Data collected from study population after taking appropriate consent

PHASE 3

- Analyzing the data
- Interpretation of results
- Discussion

PHASE 4

- Collaborating the results and discussion
- Report preparation
- Submission

5. METHODOLOGY

The study include all the consecutive patients admit to the hospital and those visit to hospital for follow up on the weekly or monthly basis with the age group more than 18 years of age.

Study Design

A Prospective Observational Study.

Study Site

The study is plan to conduct in Hospital of erode district, tamilnadu.

Study Period

The study is plan to conduct for a period of 6 Months.

Study Population

RAO SOFTWARE The sample size is 235 patients :

Sources of data

- ✓ Data collection form
- ✓ past medication history

INCLUSION CRETERIA

- ✓ Patients of either sex
- ✓ Patients of age group more than 18 years
- ✓ Patients receiving corticosteroids for different indications.

EXCLUSION CRETERIA

- ✓ Patients suffering from terminal illness
- ✓ Patients suffering from cancer
- ✓ Pregnant and lactating woman

Study procedure

- ✓ Design of data collection form
- ✓ obtain patients demographic data, previous medication and disease history
- ✓ Record of patients physical and physiological parameters
- ✓ Record of patients prescribe pharmacotherapy and follow up

6. RESULTS

This was a prospective observational study was conducted in hospital in erode about 9 months. The results of the observations are reported below.

Gender Distribution

As per demographic data obtained, out of the total 235 patients, 68 % were male and 32% were female. This data showed that commonly male population was more prone to diseases, for which steroids are used.

DISRIBUTION OF SUBJECTS BASED ON GENDER

Gender	No of Patients	Percentage Of Patients
MALE	160	68
FEMALE	75	32
TOTAL	235	100

TABLE 1: DISRIBUTION OF SUBJECTS BASED ON GENDER.

Figure: 1 Pie Chart Showing Distribution Of Subjects Based On Gender.

Age Distribution

All the patients were classified as per the age group a maximum of around 22% belongs to the age group of 59-68 and 20% belongs to the age group of 29-38 followed by least no of patients were found between the age group of 78-88 and 89-98 with the percentage of 3% and 1%.

Table: 2 Distribution on Subjects Based on Age.

AGE	NO OF PATIENTS	PERCENTAGE
18-28	35	15
29-38	47	20
39-48	28	12
49-58	38	16

59-68	52	22
69-78	26	11
79-88	7	3
89-98	2	1
	235	100

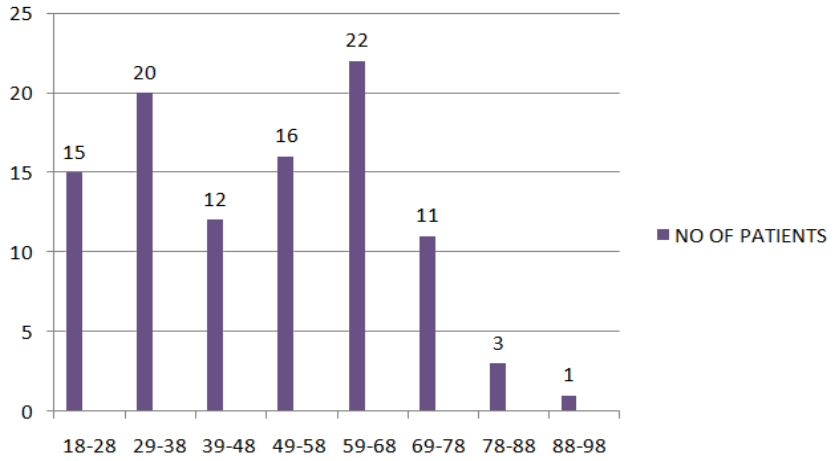

Figure: 2 Distribution On Subjects Based On Age.

Distribution of the Subjects on Usage of Steroids in Different Disease Conditions

Systems involved with the usage of corticosteroid includerespiratory with the percentage of 40%, neurology with the percentage of 15%, cardiology with the percentage of 4%, nephrology with the percentage of 2%, endocrinology with the percentage of 2%, dermatology with the percentage of 15%, hepatology with the percentage of 1%, skeletal system with the percentage of 2% and others with the percentage of 19%. Among the study population the usage of corticosteroid was most common in respiratory system. Among the study Population the diseases involved include with the systems Include.

Respiratory system

It include diseases such as Asthma with the percentage of 7%, COPD with the percentage of 21%, tb with the percentage of 6%, pneumonitis with the percentage of 3%, pleural effusion with the percentage of 1%, lung metastasis with the percentage of 1%, left respiratory tract infection with the percentage of 1%.

Neurology

It include diseases such as AMS with the percentage of 3%, CVA with the percentage of 4%, epilepsy with the percentage of 2%, meningitis with the percentage of 4%, others with the percentage of 2%. Cardiology: It includes diseases such as cad with the percentage of 3%, angioedema with the percentage of 1%. Nephrology: It includes diseases such as Acute

kidney injury with the percentage of 2%.

Endocrinology

It includes diseases such as graves' disease with the percentage of 1%, Cushing syndrome with the percentage of 1%. Dermatology: It include diseases such as exfoliative dermatitis with the percentage of 1 %, SLE with the percentage of 2%, psoriatic erythroderma with the percentage of 6%, Hansen's disease with the percentage of 4%, SIS with the percentage of 1%, allergic contact dermatitis with the percentage of 1%.

Hepatology

It includes diseases such as CLD with the percentage of 1%. Skeletal System: It includes diseases such as myasthenia gravis with the percentage of 1%, polyarthritis with the percentage of 1%.

Others

It include diseases such as anaemia, DVT, snake poisoning, radial nerve palsy, TC bleed with vesiculation, paraquat poisoning, thrombocytopenia, periodic paralysis, MCTD with vasculitis, ulcerative colitis, chronic urticaria, alopecia areata, DSAP, bullous disorder, pemphigus vulgaris,bicytopenia, acute flaccid quadriparesis, acute neurological illness.

Table: 3 Systems Involved And Usage of Steroids.

SYSTEM	NUMBER OF PATIENTS	PERCENTAGE
Respiratory system	94	40
Neurology	35	15
Cardiology	9	4
Nephrology	5	2
Endocrinology	5	2
Dermatology	35	15
Hepatology	2	1
Skeletol system	5	2
Others	45	19
	235	100

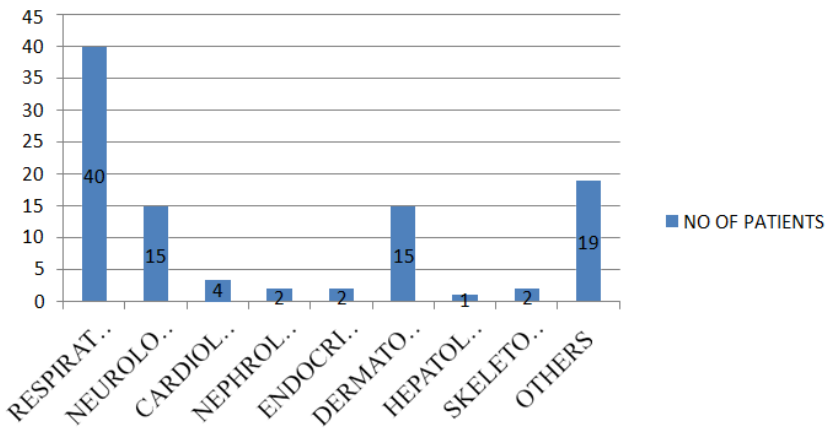

Fig No: 3 Systems Involved And Usage of Steroids.

Distribution of Different Types of Steroids Prescribed to the Patients

Among the study population the corticosteroid prescribed to patients include prednisolone, hydrocortisone, methyl prednisolone, budesonide, dexamethasone, betamethasone with the percentages as 13%, 26%, 6%, 32%, 15%, 8% among these the mostly prescribed corticosteroid is budesonide with the percentage of 32% and the least prescribed corticosteroid is methyl prednisolone with the percentage of 6%.

Table 4: Distribution of Steroids Prescribed To Patients.

DRUG	NUMBER OF PATIENTS	PERCENTAGE
Prednisolone	31	13
Hydrocortisone	61	26
Methyl prednisolone	14	6
Budesonide	75	32
Dexamethasone	35	15
Betamethasone	19	8
	235	100

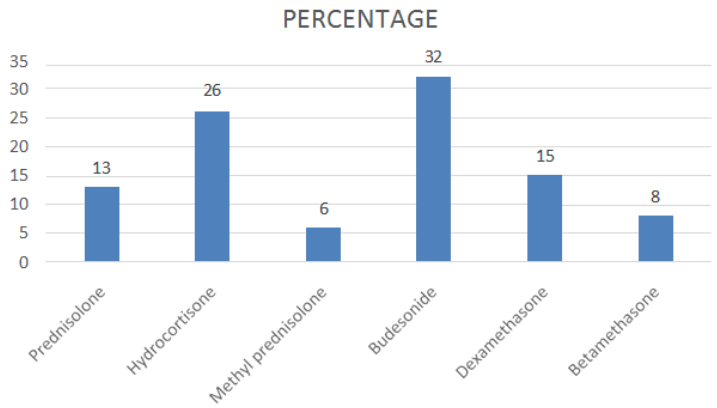

Figure: 4: Distribution Of Steroids Prescribed To Patients.

Steroids Studied For Drug Utilization Review

Indications, Dose, Dosage of Corticosteroid usage

Prednisolone

Prednisolone was prescribed to 13 patients in our study in indications such as anti-inflammatory conditions, autoimmune diseases. It was given by the route oral and IV and in dosage of 20mg and 40mg.

Hydrocortisone

Hydrocortisone was prescribed to 26 patients in our study in indications such as community acquired pneumonia. It was given by the route IV and in dosage of 100mg.

Methyl prednisolone

Methyl prednisolone was prescribed to 6 patients in our study in indications such as rheumatoid arthritis and dermatitis. It was given by the route IV and in dosage of 1g in 100ml ns.

Budesonide

Budesonide was prescribed to 32 patients in our study in indications such as shortness of breath. It was given by the route intranasal and in dosage of 0.2 mg.

Dexamethasone

Dexamethasone was prescribed to 15 patients in our study in indications such as anti-inflammatory conditions. It was given by the route oral, IV and in dosage of 8 mg.

Betamethasone

Betamethasone was prescribed to 8 patients in our study in indications such as dermatitis. It was given by topical route.

Table 5: Indications, Dose, Dosage of Corticosteroid usage.

S.No	Name of the drug	INDICATION	DOSAGE FORM	DOSE USED
1	Prednisolone	Inflammatory Conditions, Autoimmune Diseases Prednisolone was prescribed to 13 patients. 5 as anti-inflammatory, 8 for autoimmune diseases	PO AND IV	20,40MG
2	Hydrocortisone	CAP Hydrocortisone was prescribed	IV	100MG

		to 26 patients.3 for CAP and 23 to treat breathing problems		
3	Methyl Prednisolone	DERMATITIS Methyl prednisolone was prescribed to 6 patients.1 for blood disorders and 5 to treat allergic reactions	IV	1G in 100ml NS
4	Budesonide	SOB Budesonide was prescribed to 32 patients to treat	IN	0.2 MG
5	Dexamethasone	ANTI INFLAMMATORY Dexamethasone was prescribed to 15 patients as anti-inflammatory agent	PO & IV	8MG
6	Betamethasone	DERMATITIS Betamethasone was prescribed to 8 patients for skin diseases	TOPICAL	LOCAL APPLICATION

Duration of Treatment

The study was conducted on subjects for the treatment duration of 1st 6 month followed by 2nd 3 Month 77% subjects were treated for the duration of 1st 6 month, & 23% subjects were treated for the duration of 2nd 3 month.

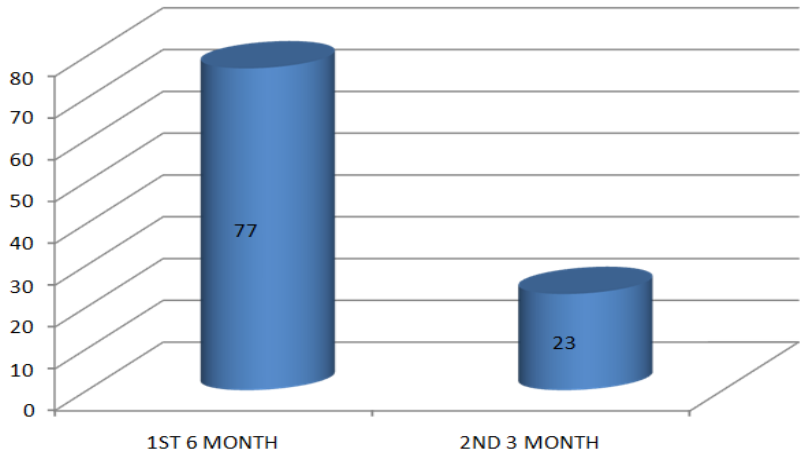

Fig: 5 Duration of Treatment.

Drug-Drug Interaction in Study Population

The study was conducted on a study population of 235 subjects and drug-drug interactions were checked on software Lexicom & out of 235 subjects 1 drug-drug interaction were found to be severe this 1 interaction were noted & 24 minor interactions were noted in the department general medicine & 0 interaction were noted in the department of dermatology.

Table No: 6 Drug Interaction.

DRUG - DRUG INTERACTION		
	Major	Minor
General medicines	1	24
Dermatology	0	0

Drug Interaction Found Severe drug-drug interaction found in the study.

Table: 7 Severe Drug Drug Interaction.

Rifampicin (Antitubercular) + Dexamethasone	Rifampicin will decrease the level or effect of dexamethasone by affecting hepatic or intestinal enzyme CYP3A4 metabolism. Possible serious or life-threatening interaction. Monitor closely. Use alternatives if available. Also, rifampin will decrease the level or effect of dexamethasone by P-glycoprotein efflux transporter. Significant interaction possible, monitor closel

Adverse Drug Reactions with Corticosteroid Usage

In this study Adverse drug reactions were reported by patients for ten instances that account for six different types of adverse effects as mentioned below in table, noted mainly by three corticosteroids were found to be the cause of adverse drug reaction. Prednisolone caused headache in 2 patients, facial mooning in 2 patients, osteoarthritis in 1 patient. Dexamethasone caused headache in 1 patient, hypertension in 1 patient, hyperglycaemia in 1 patient, hydrocortisone caused hypertension in 2 patients.

Adverse Drug Reaction Found In The Study

Table: 8 Adverse Drug Reaction.

Drug	ADR observed	NO. of cases
Prednisolone	Headache Facial mooning osteoarthritis	2 2 1
Dexamethasone	Headache Hypertension Hyperglycemia	1 1 1
Hydrocortisone	Hypertension	2

DISCUSSION

- In this study 235 Patients were included with different Morbidity who were admitted and prescribed Corticosteroids in various inpatient department of General Hospital. Demography, route of administration, corticosteroid used, dose and dose frequency, condition for use, drug interactions and ADRs subsequent to use of corticosteroids were studied.

- This study included 235 Patients out of which 160 (68%) were Male and 75 (32%) were female. This data showed that commonly male population are more prone to diseases, for which steroids are used. It shows that corticosteroids are mainly used between the age group of 22 (22%) 59-68 years. As this Age group consider to be mostly affected with many Inflammatory and chronic diseases. We observed that as the age group increased the prescribing of corticosteroids has also been more frequent.

- As per the demographic data our finding shows that Budesonide was the most frequent prescribed corticosteroid (32%) followed by Hydrocortisone (26%), Dexamethasone (15%), Prednisolone (13)%, Betamethasone (8%), Methyl prednisolone (6%). Here Budesonide was mostly used steroid.

- System Associated with the use of Corticosteroids are Respiratory, Neurological, Dermatological with a percentage of 40%, 21%, 15% respectively.

- In our study Prednisolone is used for the treatment of Inflammatory conditions and Auto Immune diseases, route of administration is oral and IV with the dosage 20, 40mg. Hydrocortisone for CAP, route (IV), Dose 100mg. Methylprednisolone for RA and Dermatitis, route (IV), dose 10mg. Budesonide for SOB, route Inhalation (IN), dose 0.2mg. Dexamethasone for Anti- Inflammatory conditions, route (oral and IV), dose 8mg.

- A Drug-Drug Interaction (Rifampicin + Dexamethasone) is noted in two patients. The patients lied in the age group of 60-70 Years, probably due to co- morbidities and more corticosteroids usage to have broad beneficial effect in older age population.

- In 235 prescriptions total 25 interactions were found out of which 24 were minor, 1 were major. Mostly minor interactions were found in the study which was consistent with the study Imran, etal. who found that 24% of the interactions were minor, 1% were major were contraindicated interactions subsequent the use of corticosteroids in his study.

- Ten ADRs were found in this study due to corticosteroids use. Facial mooning was detected in 2, headache in 3, hypergly caemia in 1, hypertension in 3 (25%) and osteoporosis in 1 (12.50%). Our study was consistent with the study of Treadwell.B, *et al* 12. WHO found that corticosteroid causes hypertension, facial mooning, osteoporosis in the subjects who were on corticosteroid therapy, Also Clore J, *et al*.13 in his study found that Glucocorticoid-induced hypergly caemia is common in patients with and without

diabetes.

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CONCLUSION

Corticosteroids are widely prescribed Drugs in Hospitals, forming a part of standard treatment of modern medicine for a wide range of diseases, which associated with inflammation and immune activation. Apart from beneficial effects they also produce number of adverse effects.

In the present study, Prospective Observational studies on DUE and rationality of Corticosteroids has been performed. Out of 235 prescriptions total 10 ADRs and 25 Drug interactions were detected in this study. The majority of drug interactions were minor 24 (24%) followed by major 1 (1%).

Most of the prescription were found to be rational some of them were found to be irrational as there were significant drug interactions. Commonly a patient between the age group of 59-68 years was more prone to diseases, for which steroids were used. Hence close observation is required.

To ensure safety, effectiveness and well-balanced therapeutic management with corticosteroids, both patients and prescribers should be more aware of the appropriate dose, dosage regimen, with careful monitoring of ADRs and Drug - drug interactions.

Hence, the clinical pharmacist can perform potential role in health care system in assisting physician in altering the number of medications taken, the number of doses taken, improving the patient medication adherence, preventing the adverse drug reactions, Drug - Drug interactions, in patient counselling, improve the health-related quality of life and decreasing the health care cost of the patient.

LIMITATION

- Till now, effective treatment guidelines for corticosteroids are not available. Even though we can't completely eliminate the occurrence of ADRs, definitely we can minimize it. Further studies are needed for implementing standard Guidelines in corticosteroid therapy and all hospitals should implement steroid treatment card to improve the quality of life of the patients.
- Time duration for this study was only 9 months which is not sufficient to give a clear conclusion regarding the knowledge of the nurses.

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ANNEXURE

A Prospective Observational Studies on Drug Utilization Evaluation and Rational Use of Corticosteroids in Tertiary Care Hospital.

Department Of Pharmacy Practice Jkkmmrf's Annai Samboorani Ammal College Of Pharmacy Komarapalayam

Patient name	Age	Gender
IP no	Department	Alcohol
DOA	Smoking	
Co morbidies if any		
Medication history		
Family history		

Physical examination

Temperature: Blood pressure: Respiratory rate: pulse rate.

Progress chart

Other investigation

Final Diagnosis

Date	Temperature (°F)	Blood pressure (mm/hg)	Respiratory rate (bpm)	Pulse rate (bpm)

Drug Treatment Chart

SI.NO	DRUG NAME	DOSE	FREQ

Discharge medication

INFORMED CONSENT IN WRITING

I understand that my participation in this study is voluntary and I may withdraw from this study at any time without giving any reason or without answering any particular question in the study. I give my consent to the member of the study to have access to my response and to publish the results, without revealing my identity. I voluntarily agree to participate in the study.